

rachna program
2001-2006

women and child health at scale

working paper series

executive summary: what we have learnt so far





Message

I am very pleased to introduce this collection of technical papers which describe the experiences, lessons learnt and findings of the USAID funded Reproductive and Child Health, Nutrition and HIV/AIDS Program (RACHNA) of CARE-India. Program results indicate a decline in malnutrition among children and we offer the lessons learnt from CARE's five year experience in the hope that these may contribute to continuing work to reach global and national development goals for child health and nutrition in India.

RACHNA supported existing national programs through two main projects: the Integrated Health and Nutrition Project (INHP) (2001-06) and the *Chayan* Project (2002-06). Implemented across seventy eight districts in nine states, INHP-II sought to improve the status of maternal and child health and nutrition and to help reduce child malnutrition and infant mortality. The *Chayan* Project aimed to increase contraceptive coverage in twenty nine of these districts and to combat HIV in twenty two cities in the states of Uttar Pradesh, Rajasthan, Chhattisgarh, Jharkhand and Delhi.

CARE India would like to acknowledge the tremendous contributions of our partner organizations and colleagues.

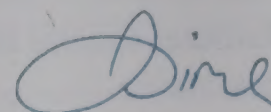
Our primary partners – the ICDS and RCH programs of the Government of India were central to RACHNA. The Anganwadi Workers, the Auxilliary Nurse Midwives and their supervisors were the prime movers, and deserve the credit for making a difference in the lives of millions of the most vulnerable. We would like to extend our sincere gratitude to the block, district, state and national leadership from the Ministry of Women and Child Development, the Ministry of Health and Family Welfare, and the State AIDS Control Societies who worked with us to improve access and quality of service delivery.

We are also grateful to the unstinting efforts of the many district and state level non-government organizations that were part of this program. At the community level, volunteers and a wide range of community-based organizations, including women's groups, inspired us to make greater efforts.

We would like to take this opportunity to thank the USAID Mission in India for their leadership and steady guidance over the five year program, particularly Dana Fischer and her team.

Above all, we especially cannot forget to recognize and record our debt of gratitude to the families, mothers and children who made the effort worthwhile. Thank you.

CARE India is committed to promoting lasting change in the well-being and social position of vulnerable groups, especially women and girls. CARE will continue to build on the achievements of INHP and *Chayan* and we hope that the insights and lessons learnt from the RACHNA experience will be useful in your work to improve child health and nutrition in India.



Elizabeth Sime
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CARE India

August 31, 2008

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Background: The RACHNA Program

The RACHNA program of CARE India included two USAID-supported projects: the second phase of the Integrated Nutrition and Health Project (INHP-II), which focused on child health and nutrition, and the *Chayan* Project, which supported interventions for promoting birth spacing and the prevention of transmission of HIV/AIDS among groups at high risk.

INHP-II, built upon the lessons and experiences of the first phase, was implemented in 747 Integrated Child Development Services (ICDS) program blocks in 78 districts across nine states¹ from October 2001 to December 2006 to complement the Maternal and Child Health and Nutrition (MCHN) efforts of the ICDS and the Ministry of Health and Family Welfare (MoHFW) programs, such as the Reproductive and Child Health (RCH) Program. To achieve its goal of achieving “sustainable improvements in the nutrition and health status of seven million women and children”, INHP-II adopted a two-track approach – supporting service providers to improve the quality and coverage of the MCHN services and engaging communities to support and sustain activities for improved maternal and child health and survival. The emphasis was on pregnant and lactating women, and children under two years old, focusing on strengthening a set of preventive interventions known to be effective in reducing child malnutrition and infant mortality. These included interventions in antenatal care,² community based newborn care,³ essential nutrition actions,⁴ primary immunization⁵ and supplemental feeding.

The *Chayan* project aimed to support men and women in being able to choose the number and timing of children and to protect themselves from Reproductive Track Infections/Sexually Transmitted Infections (RTI/STI) and HIV in 300 out of the 747 INHP blocks and 22 cities across four states. It lasted from July 2002 to December 2006, focused on strengthening government systems and mobilizing communities and building partnerships with a range of private sector providers in delivering the interventions.

RACHNA teams at the district level, working closely with the ICDS and RCH program functionaries and a range of partners, including local NGOs and community-based organizations, implemented the projects primarily through strengthening systems, supporting behavior change communication and capacity building. They were supported by state and national level managerial and technical teams.

¹ The states supported by INHP- II included Andhra Pradesh (AP – 8 of 23 districts), Chhattisgarh (CG – 10 of 16 districts), Jharkhand (JH – 17 of 22 districts), Madhya Pradesh (MP – 3 of 48 districts), Orissa (OR – 8 of 30 districts), Rajasthan (RA – 7 of 32 districts), Uttar Pradesh (UP – 12 of 70 districts), West Bengal (WB – 9 of 18 districts). The ninth state was Bihar (BI) (three districts), but since this was taken up late in the project life, it was not included in any assessments. The rural *Chayan* project supported four of these states, in the same districts as INHP (CG – 5 districts, JH – 8 districts, RA – 4 districts, UP – 12 districts).

² Antenatal care interventions include includes tetanus toxoid, food supplements, iron-folate supplements, increased diet and rest, check-ups and preparation for clean birth.

³ Newborn care interventions include clean child birth, adequate warmth, early and exclusive breastfeeding, clean handling including cord care and extra care of the weak newborn

⁴ Nutrition interventions include early and exclusive breastfeeding until age of six months, appropriate complementary feeding, food supplements and vitamin A supplements.

⁵ Immunization interventions include complete and timely primary immunization of children, as laid out in the National Immunization Program.

The Working Paper Series: Scope, Rationale, Limitations

This series of working papers places in the public domain the results and lessons of five years of CARE-India's RACHNA program, 2001-2006. RACHNA is among the largest NGO public health programs around the world. During this period, it directly influenced women and child health of a population exceeding 100 million in some of the most challenging contexts in India. The program attempted catalyzing existing public health programs and mobilizing communities to focus on a set of preventive interventions of proven value to achieve committed, measurable outcomes at this massive scale: reduce malnutrition and mortality in children, increase the use of reliable, modern contraception and reduce the risk of HIV transmission in high-risk groups. Other than the public health programs of the Government of India, which were and continue to be mandated to achieve these goals, no program had attempted anything like this at comparable scale. It should therefore be useful to learn from the RACHNA experience.

The working papers in this series reflect a part of this learning. Paper 1 describes the program in brief. Paper 2 provides details of methodology of the many assessments used during the program. Papers 3 to 7 are concerned with different technical focus areas: newborn care, infant and young child feeding, micronutrients, supplementary feeding and primary immunization. Papers 8 and 9 deal with the rural and urban *Chayan* components, respectively. Papers 10 to 12 discuss cross-cutting themes – working with existing public health systems, working with community volunteers and a cost analysis of the program. Together, the papers are designed to present the main results and lessons to any audience interested in public health programming in India, and provide a sense of what it took to implement the projects.

This paper, the Executive Summary, is an attempt to summarize the main findings and conclusions of all the papers.

It is a challenge to adequately assess the influence of a project of the size and scope of INHP. Much as one may wish to have summary estimates representing the project as a whole, such averages often tell us very little, and it is difficult to draw one single definitive conclusion about the performance of the project. Rather, the varying implementation environments in different states and districts demand careful attention to the variation. Most of the results presented are thus for the most disaggregated level available – states or districts – rather than for the project as a whole. The absence of non-intervention control areas for most of the assessments in districts or states, and the limitations of the couple of studies which included non-intervention comparison areas make it hazardous to draw more than indicative conclusions regarding both, the magnitude of change during the project period, and the attribution of change to INHP efforts. Several other stakeholders and development partners operate in the same states and districts as RACHNA, pursuing similar goals, often with similar approaches, and it is not always possible to clearly disentangle the relative contributions made by the different agencies, or for that matter, to distinguish these from the efforts made by the national programs themselves. Such comparisons may not always be desirable, either. An added complexity in the case of INHP is the difficulty of determining the true duration of the INHP interventions

in the project areas, particularly when one considers the changes in implementation strategy that were introduced as the project learned and changed over time. The conclusions drawn on the basis of estimates of indicators from sequential assessments over the life of the program are based, as they should in any program assessment, on the principle of intention to treat (the assumption that all units in the universe received uniform interventions), and yet, one cannot ignore the fact that by design, the project interventions reached the last half of the project area only in the last year of the project, and that there were known, substantial variations in implementation intensity across districts and states. Finally, the evidence presented is derived largely from assessments that are not entirely independent, where data was collected by independent professional research agencies but was managed by the project's own monitoring and evaluation teams, with the intention of ensuring that the data was of the highest quality feasible within the available resources.

Methods and Sources of Evidence

Most of the evidence for the conclusions drawn comes from a number of large sample surveys conducted over the life of the program for monitoring and evaluation purposes. Figures quoted as state and district estimates of indicators refer to RACHNA/INHP intervention areas, unless otherwise specified. Effectively, this is equivalent to all ICDS-covered blocks (sub-districts) which were supported by RACHNA/INHP. In a given district, all blocks may or may not be ICDS-covered, and not necessarily all ICDS-covered blocks in a RACHNA/INHP district were supported directly by RACHNA/INHP-II. The universe for all RACHNA/INHP surveys is limited to the blocks directly supported by the program.

Baseline and endline surveys

Baseline and endline surveys of INHP-II provided state-level estimates for selected indicators. The endline survey of INHP-I (early 2001) served as the baseline survey of INHP-II. Since state boundaries were redrawn just prior to the INHP-I endline survey, it became necessary to change the state program universes accordingly during INHP-II. Thus, the INHP-I endline for erstwhile Bihar served as the baseline for Jharkhand and the Madhya Pradesh endline served as the baseline for both Madhya Pradesh and Chhattisgarh.

INHP

INHP-I consisted of three kinds of program areas based on intensity of interventions and effort: the "High Impact" blocks, "Capacity Building blocks" and "Other blocks". The 2001 survey was designed to generate separate estimates of these three areas through a multi-stage sampling design: a fixed number of blocks and PSUs (AWCs - *Anganwadi* Centers of ICDS) were randomly picked from each of the three areas; 540, 540 and 832 respondents (mothers of children 0-23 months old) were selected from these arms, respectively using a predetermined random selection process. The interview tool was common to all mothers of children 0-23 months, and covered all interventions supported by INHP – antenatal, natal and newborn care, infant feeding and immunization. State-level estimates, derived by applying population weights to the three areas, are used for all comparisons with the endline, without reference to the three kinds of program areas.

The endline survey of INHP-II (early 2006) also used a multistage sampling design, but this differed in some respects from the baseline. The respondents (mothers of children 0-23 months old), were drawn into two samples. The mothers of children 0-5 months of age were asked questions related mainly to antenatal, natal and newborn care and breastfeeding, while mothers of children 6-23 months old were interviewed with questions related mainly to complementary feeding and immunization. This helped minimize recall bias and capture more recent events, likely to have been influenced by program interventions. The sample size for each group was sufficient to detect a 10 percentage point difference in an estimate with 95 percent confidence levels and 80 percent power, and an assumed maximum design effect of 1.8, between two surveys. The number of PSUs and blocks selected in each state varied according to the birth rates, being higher in states with lower birth rates. Blocks were selected in a manner that ensured proportionate representation of urban, rural and tribal blocks, and PSU selection within a block ensured the proportionate representation of demonstration sites (DS)⁶, replication sites (RS) and other sites (neither DS nor RS). Sampling frames were generated for children 0-5 months and 6-23 months old by prior house-listing and the target sample picked by circular systematic sampling, making allowance for a non-response rate of 15 percent. For each group, the target number to be completely interviewed was 733. Effectively, this resulted in a virtual self-weighted sample for each state.

There were changes in the program universe between the baseline and the endline, arising from factors unrelated to program interventions. Upon the advice of a Technical Advisory Group (TAG) that guided the endline survey, a comparison was made between background characteristics of the two universes, using available census data. Since only minor differences were found between the universes, the TAG recommended that comparisons between the baseline and endline universes should be considered valid.

Chayan

The *Chayan* project under RACHNA program has population data from baseline and endline surveys covering the project universe in 29 districts across four states. In addition to the data from these two sources, the data from Health Management Information System (HMIS) system reported by the ICDS functionaries from the entire *Chayan* project universe is also used.

The *Chayan* baseline survey (2003) used a multistage design to select 700 and 1,100 women in the age group of 15-44 years from urban and non-urban blocks, respectively. First, a fixed number of blocks were selected from every state, and then a fixed number of Primary Sampling Units (PSUs) from each block, followed by a fixed number of respondents from each PSU. In addition, a separate stratum of 50 randomly picked demonstration sites was drawn from across the *Chayan* districts in the state, from which 700 respondents were selected. A predetermined number

⁶ As described in the paper, *Program Description*, a Demonstration Site (DS) was an AWC that hold an NHD every month, had a community group that managed nutrition and health activities, had at least three active Change Agents and had other need based innovations. The DS were largely supported by local NGOs, and served to demonstrate how these "best practices" were to be implemented, thus facilitating their replication to the rest of the district. The AWCs beyond DS that were reached by end-2004 were termed Replication Sites (RS) and the rest as "Others", in order to provide a sense of the duration of RACHNA interventions in different AWC.

of respondents were selected from each PSU after house-listing. The *Chayan* endline survey was conducted along with the INHP-II endline survey in 2006, and followed the same design. The target sample size of respondents was sufficient to detect a three percentage point difference in the prevalence of the use of modern spacing methods with 95 percent confidence limits and 80 percent power and an assumed maximum design effect of 1.8. Although this survey was conducted along with the INHP-II endline in the four *Chayan* states, the spread of the sample was restricted to the *Chayan* districts in these states. The number of PSUs (and thus the number of blocks) selected varied by the birth rates as per the design of the INHP-II endline and thus varied from state to state. Blocks were selected in a manner that ensured proportionate representation of urban, rural and tribal blocks, and PSU selection within a block ensured proportionate representation of demonstration sites, replication sites and other sites. A sampling frame was generated for women 15-49 years of age by prior house-listing and the target sample picked by circular systematic sampling, making allowance for a non-response rate of 15 percent. Effectively, this resulted in a virtually self-weighted sample for each state. A total of 3,009 women were targeted for listing and 2,558 women for complete interviewing in each state. During analysis, only women 15-44 years were compared.

Periodic Rapid Assessments (RAPs) in the Panel Districts

In order to monitor progress in outcomes to inform program strategies, a panel of one district from each of the eight states was established in 2003, where three rounds of periodic assessments were conducted between 2003 and 2005 at approximately annual intervals. The universe for these assessments was the first phase replication sites (the first batch of 25 percent AWCs in the district where at-scale implementation began). Mothers of children 0-5 months of age were interviewed on antenatal, natal and newborn care and breastfeeding, while mothers of children 6-23 months old were interviewed on complementary feeding and immunization. Round 1 had a two-stage design, first randomly selecting five blocks from each district, and then five PSUs from each block, followed by selecting a fixed number of children 0-23 months old from each PSU, whose mothers were respondents. The target sample size was 150 for children 0-5 months old and 450 for children 6-23 months old. Rounds 2 and 3 used a one-stage design, directly picking 90 PSUs from the universe, spread across all blocks in the district, and then randomly selecting the target sample (460 each for the two age groups: 0-5 and 6-23 months) from a sampling frame generated by house-listing after allowing for a 15 percent non-response. The latter samples were sufficient to detect a difference of 10 percentage points in estimates of two surveys with 95 percent significance and 80 percent power, assuming a small design effect. The estimates from the first round were therefore expected to be less precise than those for the subsequent rounds, particularly for the smaller sample of the 0-5 month group. The tools used in Round 1 were modified to add more questions and refine existing ones, while ensuring maximum comparability.

The Newborn Evaluation Research

A newborn evaluation research (NER) study was conducted by the Johns Hopkins Bloomberg School of Public Health, to assess the impact of the INHP intervention package when implemented at scale, on neonatal mortality, using a quasi-experimental design. The study covered one program district, Barabanki in Uttar

Pradesh, using non-RACHNA ICDS sites in Unnao district for comparison, and lasted about 30 months. The baseline survey was conducted in mid-2003 and the endline survey was contemporaneous with the RACHNA program endline survey in early 2006. Two smaller "adequacy" surveys were conducted at intervals between the baseline and endline surveys. This study was the only source of neonatal and infant mortality data in INHP. More detail of these surveys and related information is available from the paper *Methods Used for Assessments in the RACHNA Program*, in this series. In all surveys, for all antenatal and newborn care practices assessed at the household level, data for mothers having a child up to six months of age has been used in order to minimize recall bias about perinatal events. This pattern was followed even for the evaluation research study, although data is available for a longer period of recall from these surveys. The use of a narrow age group also helps detect more recent change, which is helpful in understanding the effects of interventions that were rapidly scaled up over the last three years of program life, and hence were expected to produce greater effects later in the course of the intervention. Since the program interventions focused on home based care for newborns, and it did not involve interventions for improving institutional care of the newborn, analysis is largely limited to those children born at home. Home births constitute the bulk of all births in most states, so the effect on sample size is small except in Andhra Pradesh and West Bengal, where larger proportions of births were institutional. For a few selected indicators, hospital births were separately analyzed, particularly in the Andhra Pradesh and West Bengal contexts.

The Nutrition Evaluation Research

The nutrition evaluation research study was conducted by the Johns Hopkins Bloomberg School of Public Health to assess the impact of the INHP intervention package on the nutritional status of children 0-23 months old, when implemented at scale. The study lasted two years. It was located in two program districts – Barabanki in Uttar Pradesh and Karimnagar in Andhra Pradesh, using ICDS covered areas in Unnao in Uttar Pradesh and Rangareddy in Andhra Pradesh as non-intervention comparison. The study used a quasi-experimental pre-post design with multi-stage sampling. The baseline survey was conducted in 2003 and the endline survey was contemporaneous with the RACHNA program endline survey in early 2006. Two smaller "adequacy" surveys were conducted at intervals between the baseline and endline surveys. Sample sizes at the baseline and endline surveys were designed to be adequate to detect a difference of 0.18 in z scores of nutritional status.

Key Program Results

Enhancing Newborn Care

It is now well-recognized that further reductions in infant mortality in India will not come about until neonatal mortality is brought down, and that, until the bulk of births take place in institutions, effective interventions will need to reach the homes where births are taking place. In its effort to help reduce infant mortality, INHP-II therefore chose to prioritize a set of interventions at the home level that had the greatest likelihood of preventing neonatal deaths and which were simple

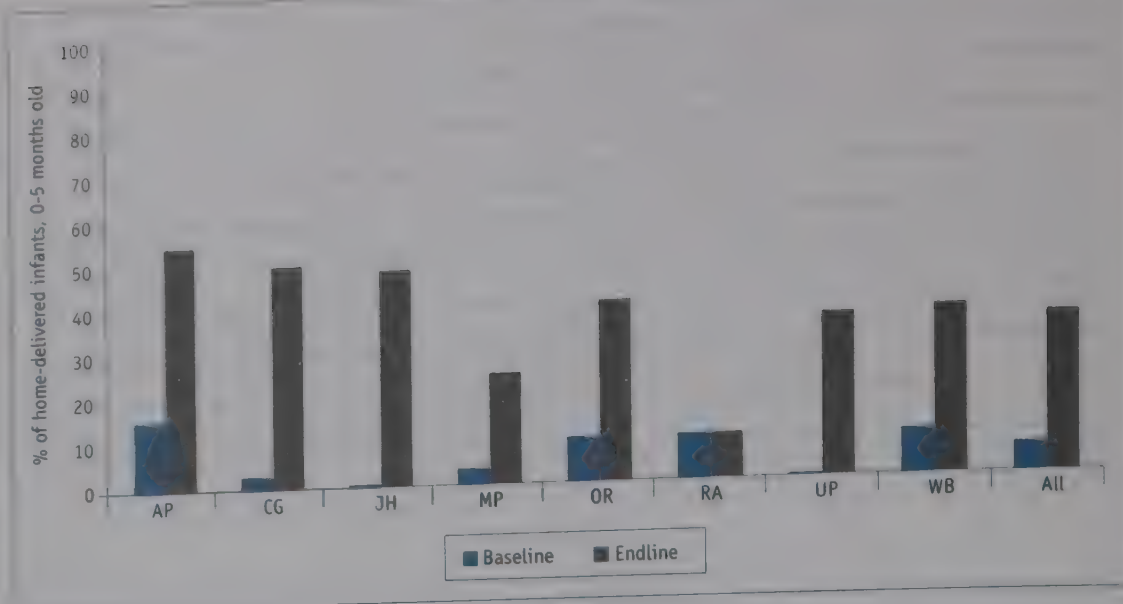
and feasible to implement at large scale. The program predominantly focused on preventing deaths due to sepsis and premature births, using preventive approaches. The package of supported interventions did not include the community-level management of sepsis and asphyxia. While the project supported the Government of India's goal of maximizing the proportion of newborns delivered in institutions, the project did not intervene to improve accessibility and quality of care at institutions. Referral to facilities for sick neonates was encouraged, but in the absence of appropriate facilities in most contexts, was not considered an intervention of consequence. There were significant increases in the proportion of institutional deliveries in Andhra Pradesh, Madhya Pradesh and Uttar Pradesh from the baseline to the end-line. Other than in Andhra Pradesh, Madhya Pradesh and West Bengal, over 75 percent of births still took place at home, as on early 2006.

The key interventions promoted by INHP-II to help reduce neonatal mortality were: Tetanus Toxoid (TT) immunization, clean delivery and cord care, adequate warmth, early and exclusive breastfeeding, and the recognition and extra care for the weak (premature/low birth weight) newborn.

Key Results

- Two-dose TT coverage rates either increased 10 percent points or more, or maintained high coverage between the baseline and end-line surveys in seven of eight states. Program level two-dose coverage was 82 percent at the endline.
- Large improvements were seen in most key indicators related to immediate newborn care at birth. This included initiation of breastfeeding within two hours (aggregate 29 percentage points, range 6 to 53), the avoidance of pre-lacteal feeds (aggregate 36 percentage points, range 2 to 72), delaying the first bath beyond three days (aggregate 41 percentage points, range 22 to 56), and the use of five "cleans" at birth (aggregate 19 percentage points, range -7 to 47).
- The increases were particularly marked in the correct practice of behaviors related to warmth, cleanliness and feeding all taken together. For instance the proportion of newborns in whom the first bath was delayed by three days, *and* the first feed was given within 2 hours without giving prelacteals, *and* nothing was applied to the cord increased from 7 percent at the baseline to 35 percent at the end-line at the aggregate; other than in Rajasthan, the increment from the baseline exceeded 20 percentage points in all states (Figure 1).
- Indicators for the identification and extra care of the premature/LBW newborn are not available from the baseline, but at the end-line, about 17 percent (range 12-24 percent across states) of mothers who were visited at home in the week after birth by either the AWW (*Anganwadi* Worker – the frontline paid volunteer of the ICDS program) or ANM (Auxiliary Nurse Midwife, or Multipurpose Health Worker – Female – MPHWF, the frontline MCH worker of the RCH program) reported that their babies had been identified as "weak", which accounts for about half the expected prevalence of prematurity/LBW in these communities.
- Strong associations were seen at the endline between processes promoted by INHP, such as home visits during crucial periods in late pregnancy and the

Figure 1: The proportion of home-delivered babies 0-5 months old, whose mothers reported correct cleanliness, feeding and warmth practices immediately after birth, baseline (2001) and endline (2006).



first few days after birth and advice received during such visits, and correct newborn care practices such as early breastfeeding, cord care and thermal care. Serial data from periodic assessments in selected districts indicates that these crucial process indicators improved rapidly over time in at least half the districts, and that the AWW of the ICDS program contributed substantially to the large increases in home visits made by service providers.

- The newborn evaluation research study reported greater increases in most of the examined indicators of newborn care practices in the intervention district as against the comparison district.

Impact on Neonatal Mortality

The only source of evidence on the effect of INHP interventions on mortality is the newborn care evaluation research study in one program district, Barabanki in Uttar Pradesh. Despite significant differences between INHP-intervention and non-intervention (ICDS and RCH only) districts in terms of changes in newborn care practices as mentioned above, no differences were found in neonatal mortality rates between the study and comparison areas by the end-line. The report on the study speculates that the failure to see measurable differences could be due to the overall lower than adequate prevalence of desirable practices, despite the significant improvements in the intervention areas, and due to the minimalist package of interventions, which did not include the clinical management of sepsis or asphyxia.

Even without the inclusion of sepsis and asphyxia management, studies have reported achieving a 10-30 percent reduction in mortality from adequate application of interventions similar in nature to those promoted by INHP. Within the INHP areas, wide variations were observed in the magnitude and pace of improvement in newborn care practices in different state (baseline-endline) and district (RAPs) contexts. It is conceivable that, although mortality rates were not measured, a mortality impact may have been achieved in areas where such improvements were of sufficient magnitude.

Changing Infant and Young Child Feeding Practices

Poor infant and young child feeding behaviors are known to be one of the most important causes of child malnutrition, which in turn is a major cause of child mortality. Early evidence from program areas established that inappropriate feeding practices and high incidence of childhood infections were probably the most widely prevalent causes of high malnutrition rates in children under the age of two years. While the management of infections was not within the scope of INHP, the project intervened to assist the ICDS and RCH programs focus their efforts to promote healthy feeding practices in families with children less than two years old. The primary approach was to encourage timely advice during contacts and home visits by service providers and volunteers during the critical periods before and after 6 months of age, to provide the information and support needed by mothers and families to maximize exclusive breastfeeding and appropriate complementary feeding. The feeding of home-available foods *ad libitum* after six months was emphasized, guided by an idea of how frequency and amounts should increase with age. Variety, nutrient density, responsive feeding and the need to ensure adequate attention to child feeding during and after illnesses were also emphasized, but all “messages” did not reach all areas with uniform intensity.

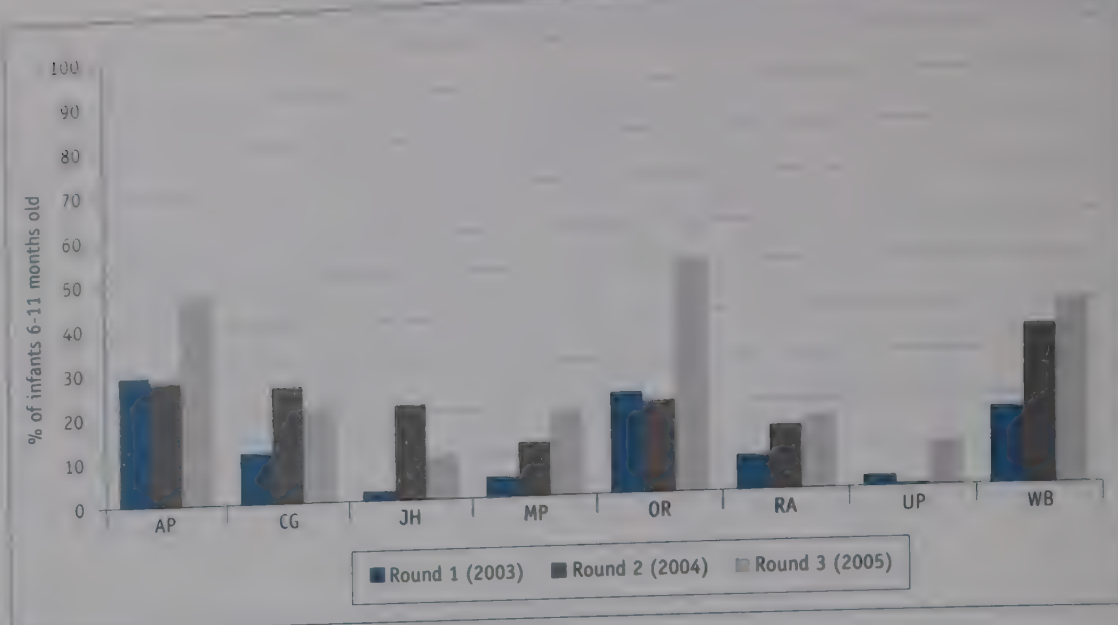
Key Results

- Exclusive breastfeeding rates based on 24 hour recall increased 13 percentage points from the baseline to reach about 79 percent program-wide, at the end-line. A greater than 10 percentage point increase was seen in four of the eight states, the highest changes being seen in Jharkhand (31 percentage points) and Rajasthan (28 percentage points).
- In five of the eight states, there was an improvement of 10 percentage points or more in the proportion of children introduced to semisolids at the right age, that is, between 6-8 months.

The program baseline did not capture all indicators of relevance, but evidence was available from serial rapid assessments (RAPs) conducted in a panel of one district in each state during 2003-2005:

- Improvements of 10 percentage points or more in the practice of feeding complementary foods at recommended frequency were seen in six districts for 6-11 month-olds and in four districts amongst the 12-23 months age group.
- Volumes of cereal-based semisolid food fed to children (and consequently, energy consumption) increased in most districts, particularly in the 6-11 month age group, starting from very low levels in 2003. However, even in districts demonstrating the highest levels of complementary feeding, barely half the children 6-11 months of age were consuming even half the quantities recommended for the age (Figure 2). This failure to feed adequate amounts of home available food is probably the single biggest preventable cause of malnutrition, and is true of virtually all children in the community.

Figure 2: Infants 6-11 months who were fed half or more of the age-appropriate recommended volumes of cereal-based semi-solids in the previous 24 hours, RAPs, Rounds 1-3, 2003-2005.



- An analysis of comparable infant feeding indicators between the INHP end-line survey and NFHS-3 indicates that INHP areas had better practice rates for exclusive breastfeeding across all states and in at least five states for complementary feeding with continued breastfeeding in the 6-9 month age group. Both the INHP districts that were included in the nutrition evaluation research showed significantly greater improvements in early and exclusive breastfeeding indicators than the corresponding non-INHP districts. Complementary feeding practices improved significantly in the INHP district as compared to the non-INHP district in UP, but not in AP.
- Evidence from process indicators strongly suggests that processes promoted by the program (timely contacts and focused advice) were increasingly taken up and practiced by the service providers (AWW and ANM) over time, and that actual feeding practices as reported by mothers were strongly associated with these processes.
- Most of the background factors examined (such as indicators related to socio-economic status) had weak associations with feeding practices.
- Most families appeared to have access to cereals, but the availability of pulses, vegetables and milk products was well short of universal, and presents a genuine food security problem in all states. However, there are significant gaps in the utilization of available foods from these four important food groups for child feeding, with up to 50 percent of children reportedly not fed an available food group in some cases.

The INHP experience indicates that infant and young child feeding practices can change at large scale, and change relatively quickly and measurably, largely through the efforts of existing field workers of the ICDS and RCH programs. This is particularly true for one time practices such as early initiation of breastfeeding and avoidance of prelacteals. Improvements in exclusive breastfeeding and complementary feeding practices are slower and probably require more sustained inputs.

Impact on the Nutritional Status of Children

The final evaluation of RACHNA established an eight percent reduction in malnutrition (weight for age being lower than 2 z-scores below the NCHS reference, among children 12-23 months old) program-wide from 61 percent in baseline to 53 percent at end-line. This reduction is nearly twice that seen in the all India rural average for this indicator between the NFHS-1 and NFHS-2, and much larger than the small change between NFHS-2 and NFHS-3. However, the nutrition evaluation research did not find any measurable difference in the nutritional status between the two intervention and comparison districts over about two years of intervention. The final evaluation speculated that the magnitude of change in feeding practices at the program level was by itself insufficient to explain the program level reduction in malnutrition levels, and that the improvement in the coverage of measles vaccine could also have contributed to better nutritional status. As in the case of impact on mortality, since only two districts were assessed in the controlled study, it is difficult to draw any definitive single conclusion about the impact on nutritional status across all program areas. Given the wide variation in behavior change across different states and districts, and it is conceivable that, where changes in feeding practices were substantial, nutritional status could have been significantly impacted. From the evidence available from the RAPs, a significant (13 percentage point) reduction in proportion of malnutrition was seen in the 6-11 month age group in one district (Kalahandi in Orissa), between Rounds 2 and 3. The mean weight-for-age z-score increased about 0.4 z scores, and the proportion of severely malnourished infants came down to almost half that in Round 2. This was accompanied by an increase in the frequency (1.28 times) and volumes (about 80 kcal) of semisolids fed to the infants between the two rounds, and strong associations were observed between these practices and the reported home contacts and advice given by the AWW and ANM.

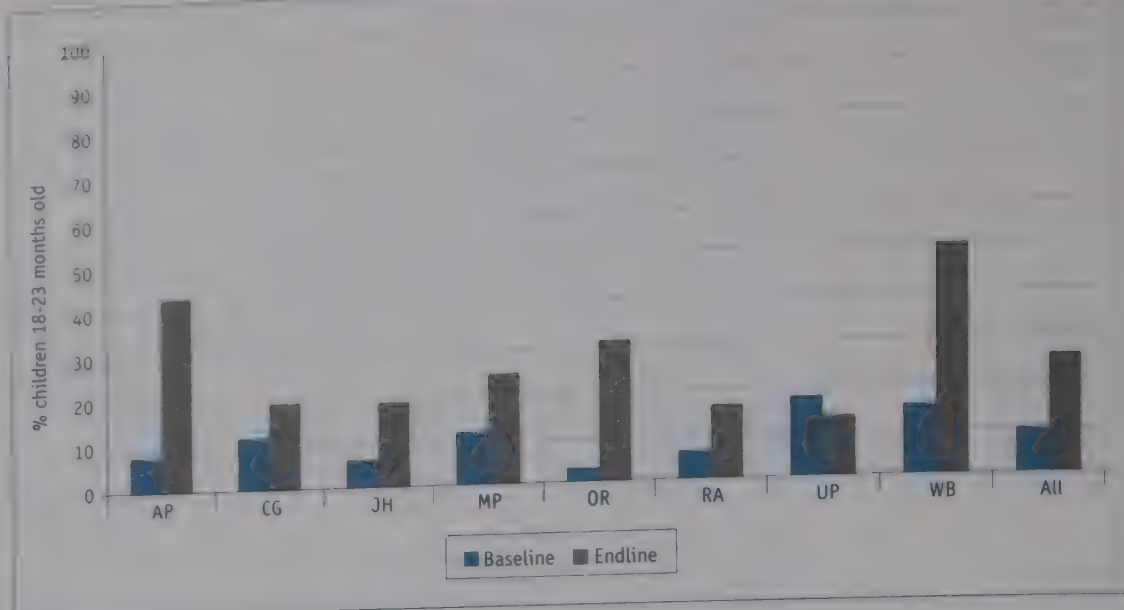
Widening Coverage of Vitamin A Supplements

INHP supported both the routine and the biannual strategies for vitamin A coverage of the GoI, and in partnership with state governments, MOST/A2Z, UNICEF, and WHO, attempted to find and plug operational gaps in reaching higher coverage. Specific areas of support included training inputs to the AWWs and ANMs and their supervisors; strengthening of recording and tracking systems, including modifying (immunization) service registers to capture five doses of vitamin A, and using due lists to identify children due for the prophylactic doses. Helping improve coordination between the AWW and ANM to maximize coverage and identifying supply chain gaps at PHC and lower levels, and helping the systems rectify them through local advocacy efforts were other areas of support.

Key Results

- At the program level, the first-dose coverage in children 12-23 months old increased 26 percentage points from the baseline. Achieved first dose coverage in Jharkhand, West Bengal, Andhra Pradesh and Orissa was in excess of 70 percent at the endline.

Figure 3: Children 18-23 months old who had received 2 doses of Vitamin A, baseline (2001) and endline (2006).



- At the program level, the two-dose coverage among children 18-23 months old increased 16.5 percentage points from the baseline with West Bengal, Andhra Pradesh, Orissa and Madhya Pradesh achieving greater than 20 percent two-dose coverage by the end-line. West Bengal showed the highest achievement, at almost 50 percent.

The primary reasons for most states being able to push up first dose coverage rates to those comparable to measles vaccine appear to be a greater emphasis on the use of vitamin A on immunization days. Since, in most states, the proportion of children being immunized at the AWCs has increased substantially with time, there is good reason to believe that the ICDS has had a strong role to play in achieving this increase. The low achieved coverage for two doses (and thus for higher than two doses) is cause for major concern. In West Bengal, Orissa and Andhra Pradesh, a strong push from the Health system appears to have been responsible for the relatively stronger showing in two-dose coverage, including through a greater emphasis on recording and reporting on later doses of vitamin A. From the available evidence, it appears that the biannual strategy, which was successively implemented by state governments in about half the INHP states by 2005, has probably brought greater attention to the first dose, but did not succeed in making the expected breakthrough in the coverage of subsequent doses. The INHP experience suggests that it has been uniformly difficult to get consistent supervisory attention to this simple intervention.

Widening Coverage of Iron Supplements

INHP supported the ICDS and RCH programs in increasing coverage of iron-folate (IFA) supplements, primarily among pregnant women. As in the case of vitamin A, the specific inputs included capacity building support to the AWWs and ANMs to ensure adequate understanding of the rationale for iron supplementation and the key operational elements likely to maximize coverage such as tracking, education and follow-up. Emphasis was placed on both, timely distribution and consumption of IFA tablets by pregnant women. Convergent functioning of the AWW and ANM was strongly encouraged.

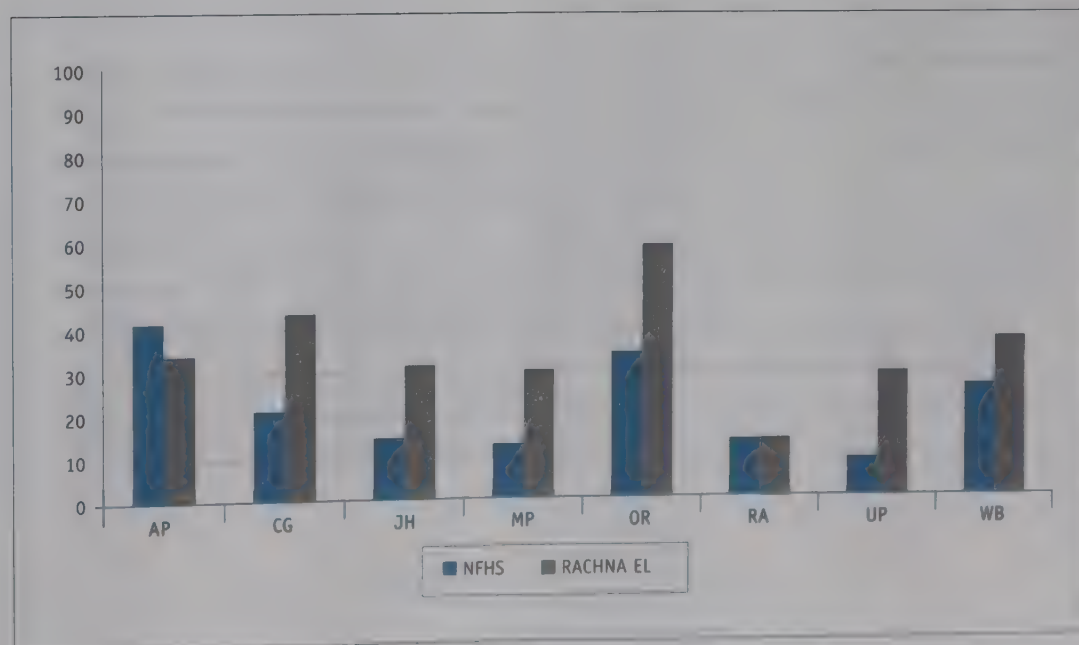
Key Results

- The reported receipt of IFA tablets by pregnant women during pregnancy increased substantially. The receipt of 90 or more IFA tablets increased about 25 percentage points or more in seven of the eight states between the baseline and the endline. On average, the mean number of tablets received increased between 14 and 44 tablets in different states.
- The consumption of at least 90 IFA tablets during pregnancy increased 10 percentage points or more in seven of eight states, reaching almost 60 percent in one state, Orissa. The mean number of tablets consumed increased between 11 and 77 tablets in six of eight states, and remained unchanged in two of them.
- Compared to the NFHS-3, which represented entire states, the reported consumption of IFA tablets was substantially more in six of the eight states in the RACHNA endline (Figure 4).
- Other than in West Bengal and Andhra Pradesh, half or more of the pregnant women reported having received their tablets from the AWW at the endline. An analysis of the second and third round of the RAPs revealed that increases in receipt and consumption of IFA tablets were closely paralleled by increases in the proportion of tablets received from the AWW.

Despite increases in both distribution and consumption of IFA tablets, a gap of about 15-40 percentage points remained between distribution and consumption even at the endline, suggesting that while distribution does drive better consumption rates, other factors continue to influence consumption.

All states and districts covered by INHP-II did not focus uniform efforts on improving pediatric IFA coverage, and thus consistent information is not available for this intervention. From field observations, it appears that replacing tablets with a more user-friendly formulation and focusing policy and program attention on anemia in this age group are challenges that urgently need to be addressed.

Figure 4: Proportion of pregnant women consuming at least 90 IFA tablets, NFHS-3 (2005-2006) vs RACHNA EL (2006).



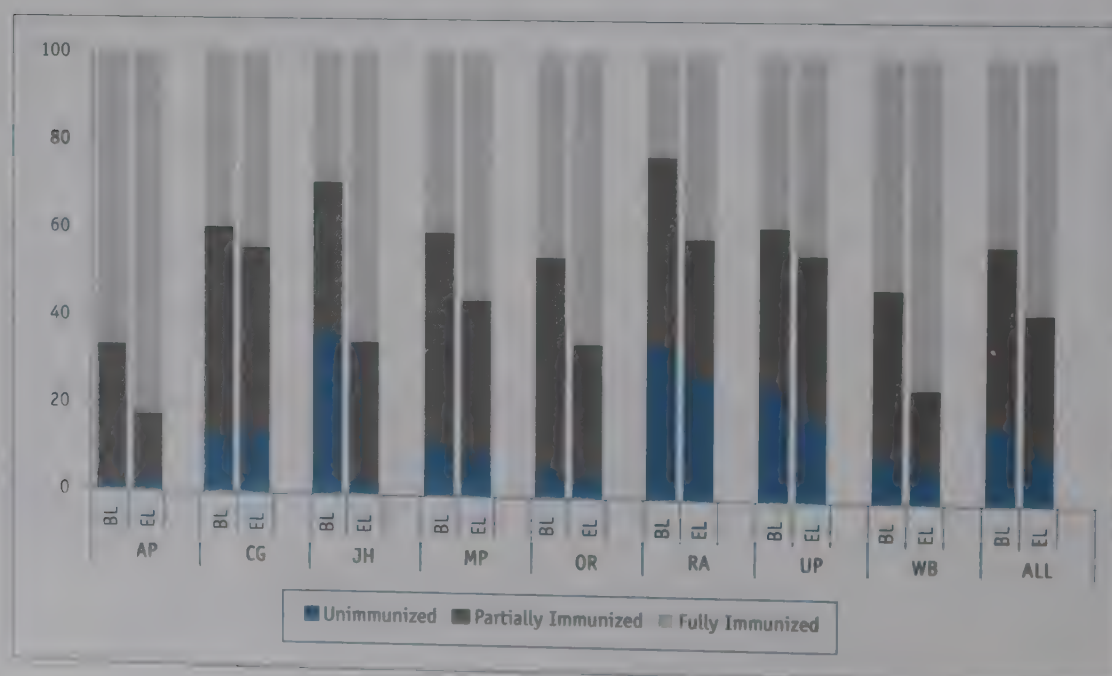
Widening Coverage of Primary Immunization

In providing immunization services, the RACHNA program focused primarily on improving operational effectiveness of the National Immunization Program of the MoHFW and the ICDS program by promoting effective convergence between the two, focusing on maximizing coverage of primary immunization. RACHNA did not focus on technical complexities of cold chain or injection safety issues, although across states, there were varied efforts in advocating for greater attention and action around these issues in appropriate forums.

Key Results

- At the aggregate program level, the proportion of children 12-23 months old who received full primary immunization increased by about 16 percentage points by the endline in 2006, compared to the baseline of 2001. Significant increases were observed in almost all antigen coverage rates across all states, reflecting in increases in full immunization rates as well (Figure 5).
- Substantial variations were seen across states, in terms of both, the magnitude of change and absolute coverage rates. Jharkhand state recorded the most impressive increases in immunization coverage, reaching 64 percent full immunization.
- Program-wide, the proportion of children not receiving any vaccine was reduced by about a third, from 19 percent at the baseline to 10 percent at the end-line, with only three states having more than 10 percent totally immunized: Rajasthan, Uttar Pradesh and Chhattisgarh. The proportion of drop-outs after the first vaccine also reduced over time from 48 percent to 35 percent.
- The proportion of children getting immunized at outreach sessions held at the AWC increased from the baseline to the end-line, and this was particularly true of the states which had very low coverage at the baseline, suggesting that the ICDS has contributed substantially to the improved immunization coverage.

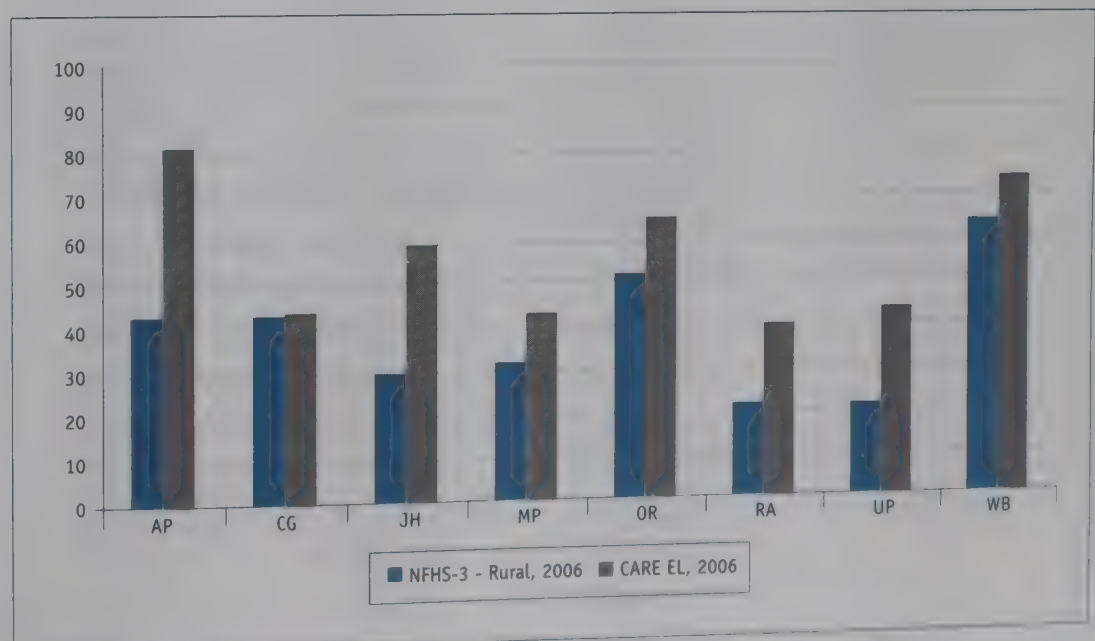
Figure 5: Immunization coverage, children 12-23 months old, baseline (2001) and endline (2006).



- The evidence also suggests a narrowing of the equity gap in the immunization coverage rates over time.
- While there were occasional disruptions in the supply of individual antigens in the INHP areas over the last two years of the project, this was not the bottleneck that precluded attainment of higher coverage.
- Achieved immunization coverage rates in the INHP areas as estimated by the end-line survey of early-2006 were greater than state-wide immunization rates as estimated by the NFHS-3 which was conducted simultaneously, suggesting that INHP contributions were making differences at scale (Figure 6).
- Available evidence and field observations suggest that the most important factors that contributed to the increases in immunization rates in INHP areas include the increased regularity and reliability of outreach sessions, the close coordination of these services with the ICDS, the efforts to improve tracking systems, and in some states, the incentive of food supplements. The mobilizing of community volunteers, community based organizations and local governance institutions i.e., the *Panchayati Raj* Institutions also contributed.
- The institution of Nutrition and Health Days (NHD) during INHP, where take-home food supplements are distributed by the ICDS on the same day as the provision of outreach services by the ANM at the AWC, appears to have helped make outreach sessions more predictable and visible, provided a forum for coordination between multiple stakeholders, and provided mechanisms for mutual checks and balances.

The INHP experience indicates that, contrary to the popular belief that supply gaps and poor demand and acceptance by communities are the main bottlenecks, it is in often the lack of attention to simple operational details such as listing and tracking children and reminding families in a timely manner, and the supervision of such tasks, that are the primary challenges, and these are relatively easy to correct.

Figure 6: Full immunization coverage, children 12-23 months old – NFHS-3 (2006) and RACHNA endline (2006).



The role of supplemental food in an MCHN program.

CARE supported the supplemental feeding component of the ICDS since its inception in 1975, with USAID-provided PL 480 Title II food commodities. Until 2002, INHP-II provided the full package of commodities for supplemental feeding in its program areas, the USAID-provided Corn Soya Blend (CSB) and Refined Soybean Oil (RSO). With the Government of India decision, in July 2002 to disallow the import of CSB with a pretext of bio-engineered food, State Government-provided grain eventually replaced CSB to be combined with the Title II RSO.

The INHP strategy explicitly recognized the role of supplemental feeding beyond the direct provision of the food and positioned it as an incentive to attract families and communities to access health services, through the mechanism of NHD. On NHDs, INHP promoted take-home rations (THR) for pregnant, nursing mothers and children 6-36 months, while daily center based feeding continued for 3-6 years old children. This strategy, successfully demonstrated in INHP-I was further refined and scaled up during INHP-II.

The program made significant gains in terms of improved reach of food supplements to families with low socio-economic scores, including the scheduled castes/tribes groups. Disruptions in commodity flow due to restrictions on distribution of bioengineered foods and usage of the average planning figures for the allocation of beneficiaries across all the AWCs irrespective of the size of the catchment area, are some of the probable reasons for the continuing limited reach of food supplements.

Key Results

- The reach of food supplements, already moderately high at the baseline in most states, improved to variable extents across states, reaching around 80 percent of the families interviewed in most age groups in five states. The clearest coverage improvements were seen among children older than 6 months, with greater than 10 percentage points increment in six of the eight states. In Rajasthan and Uttar Pradesh coverage rates remained below 50 percent at the endline, while, in West Bengal, they reached just over 50 percent.
- Evidence from the nutrition evaluation research study indicates that increments over project life, and achieved coverage rates at the endline were higher in RACHNA-assisted districts. Also, consumption of distributed food supplements by women and children was significantly higher in the RACHNA-assisted districts.
- Coverage of all health services, whether those provided at a center, such as antenatal care, immunization and micronutrient supplementation, or those at home, such as home visits and advice related to health and feeding, were strongly associated with receipt of food supplements from the ICDS. This strong association extended to services and home visits by the ANM as well, suggesting that, on the ground, the AWW and the ANM have a close functional relationship, and the ANM tends to depend on the AWW's lists of beneficiaries for targeting services.

The ICDS is committed to provide services, including supplemental food, universally to all pregnant and lactating women and children under six years, and to extend the ICDS scheme to all villages. Therefore, the use of supplemental food in the most meaningful way to contribute to improving nutritional and health status of women and children assumes great importance. The universalization opens up possibilities of making the demonstrated INHP-II approaches, such as the NHD approach also universal. While a certain level of improvement can be expected through linking supplemental food and health services, supplemental food alone, or for that matter NHDs alone, cannot be expected to resolve the problem of malnutrition. Consistent effort to synergistically use approaches to enhance coverage, minimize exclusion, track left-outs, provide effective behavior change messages, and overcoming common operational program constraints will be critical.

Deepening Access to Spacing Methods

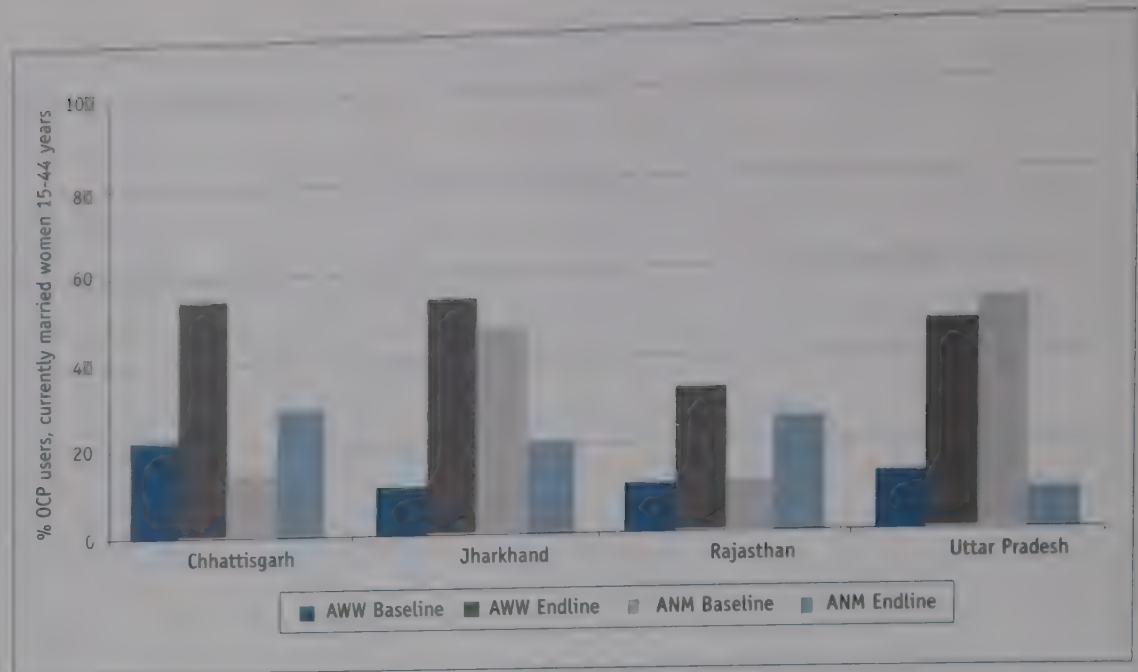
The rural *Chayan* project, implemented in four high-fertility northern states, used a variety of approaches to help increase contraceptive choice and the use of modern spacing methods, including social marketing, community volunteers, and strengthening government systems, particularly involving the ICDS in several ways, including the use of the AWW as depot holders for contraceptives. Although originally a five-year project, this was cut down to about three years between the baseline and endline surveys in order to synchronize with the INHP.

Key Results

- The Contraceptive Prevalence Rate (CPR) for spacing methods (OCPs and condoms) recorded an increase of 4.8 percentage points over a three year period (2003-2006).
- Of the four states, the rise was most marked in Jharkhand. The OCP use in Jharkhand has increased from 1.3 percent in baseline to 11 percent at the end-line and in Chhattisgarh from 1.7 percent to 4.6 percent. At the same time, condom use has increased from 1.2 percent to 6.5 percent in Jharkhand, from 2.2 percent to 4.1 percent in Rajasthan and 5.3 percent to 8.9 percent in Uttar Pradesh.
- In all four states, users reported accessing OCPs and condoms from the AWW far more frequently than at the baseline, while in two states, the proportion of respondents reporting that they had received the contraceptives from the ANM declined (Figure 7).
- More than 75 percent of the mothers reported being contacted by the service provider in all states except Rajasthan where the corresponding figures were about 30 percent at endline. Near half of the women who reported contacts in the last month received advice on family planning in addition to child health.

One of the key achievements of *Chayan* has been to use the MCHN program platform to deliver family planning interventions, at scale, by closely working with

Figure 7: Source of OCP among currently married women 15-44 years, Chayan Baseline (2003) and Endline (2006).



existing Government systems and engaging effectively with other development partners. The program has shown that the key approach of ensuring free supplies by the Government as well as promoting socially marketed contraceptives is effective and expands the basket of choice for family planning for women and men in reproductive age group. The experience shows the possibility of how the RCH program can effectively utilize the ICDS program to deliver contraceptives.

Regular inputs (training and ongoing supervisory support using sector meeting platform) to frontline service providers seemed to have contributed towards quality counseling and reaching prioritized couples with right messages.

Based on initial lessons, the program recognized the scope for improvement, especially in expanding its scope to reach out to newly weds, low parity and younger age couples, along with reinforcing and consolidating the existing efforts with couples, especially women who had either delivered in the recent past or had children less than two years of age.

Program Approaches

Working with Community Volunteers

INHP established Change Agents (CAs) with the objective of having, at the community level, a cadre of volunteers to contribute to improving MCHN outcomes through better utilization of services by minimizing exclusion, and more importantly to promote and sustain the critical behavioral change needed to affect MCHN outcomes. The name, 'Change Agents', reflects their envisioned role. While local NGOs were contracted to recruit, train and support the CAs initially, all aspects of the CA approach from recruitment to sustenance was transitioned to the ICDS, the health systems and the PRIs when the program went to scale.

Program-wide, 68 percent of the AWWs reported at end line that they had CAs in their coverage areas to whom specific households had been assigned - ranging from 50 percent in West Bengal to 83 percent in Chhattisgarh; about 59 percent

of them reported that they had at least three CAs. Per these estimates, about 250,000 CAs were identified, trained and supported across 50,000 AWCs by the end of the program.

The program had mixed experiences on the contributions of the CAs to program outcomes. While about 76 percent of CAs reported participating in the last NHD that happened in the village, most of them were merely assisting the AWWs, calling families to attend NHDs, important roles, but falling short of the expectations of them promoting behavior change through counseling. Moreover, the contacts made by the AWWs and ANMs are far greater than those made by CAs. For example, during the last trimester of pregnancy, contacts by CAs were in the range of 2.1 percent to 24.7 percent as compared to contacts made by the AWW/ANM which were in the range of 12.6 percent to 47.6 percent.

One of the biggest lessons learnt is that the intensity and level of effort required to build CAs was unsustainable for a large-scale program with a time-bound, outcome-oriented approach. Even with minimal support and the six to nine day training, it is very difficult and expensive to implement a community volunteer strategy at program scale or see concrete results relative to the level of effort. A longer-term approach with adequate resources may work for building and sustaining successful community volunteers. Another significant learning has been that a more balanced level of effort dedicated to community engagement and strengthening systems is critical throughout the life cycle of a program. Although INHP was able to make mid-course corrections and strike a better balance, such major changes in focus might not be possible for public programs to make, at least not rapidly.

The CA strategy offers some useful lessons for the ASHA strategy of the NRHM. Issues such as establishing clear criteria for selection of the CAs, providing ongoing training and mentoring by the AWWs and ANMs, need attention if more meaningful contributions to behavior change at the community level are expected.

Working with Existing Systems

None of the technical interventions that RACHNA promoted were new to the existing national programs, ICDS and RCH. In opting to support the national program for a chosen set of interventions, RACHNA was attempting to help the programs prioritize interventions that had the highest likelihood of delivering population level impact. RACHNA began with certain assumptions about the best operational approaches to achieve this, learnt lessons along the way and utilized mechanisms that are potentially robust enough to drive a wider array of outreach interventions, not necessarily limited to child health and nutrition. The RACHNA approaches for strengthening the existing public health programs included the following:

- Strengthening techno-managerial operations of mainly the ICDS, and to a lesser extent, the RCH programs, designed to improve service coverage and behavior change outcomes:

- The use of job-aids such as a home-visit planner/register to help AWW make timely contacts with families during periods in pregnancy and the first two years, when critical decisions must be made in adopting correct child caring and feeding practices. By the endline, about three-fourths of the AWW across the INHP areas were using such planner/registers.
- The rationalization and strengthening of existing recording systems to track children for services such as immunization methodically and effectively.
- The structuring of the field visits of the ICDS supervisors to provide oversight to priority interventions and approaches, using checklists where feasible.
- The use of feasible, on-going capacity building approaches through existing supervisory mechanisms to drive focused interventions, such as the structuring and strengthening of sector meetings of the ICDS. By the end-line, monthly sector meetings in most ICDS sectors across the program districts were using structured time to build the AWWs capacities.
- Strengthening mechanisms for closer coordination and effective synergy between the ICDS and RCH at operational levels
 - Enhancing the regularity, quality and effectiveness of outreach fixed-day, fixed-site health sessions of ANMs at the AWC, including through the promotion of NHDs, where THR of supplemental food are distributed on the same day as the services by the ANM.
 - The use of block and district level coordination forums, such as multi-stakeholder advisory committees for periodic joint review and planning by the ICDS and RCH program managers. Virtually all program blocks had one or other kind of such forums active by the endline.
- Exploring mechanisms for the inclusion of community representatives in overseeing and influencing the national programs
 - Mechanisms for community-based groups, including women's groups and local governance institutions (PRIs) to track and support the uptake of services and behavior change
 - The participation of people's representatives in block and district level forums
 - A number of diverse local initiatives built around communities and their culture that attempted to strengthen or complement the work of the ICDS and RCH programs.
- Informing policy and planning at various levels through evidence based advocacy
 - The strengthening of district level program review and planning processes through structured workshops that used available data and evidence, including the RAPs data from the panel districts. It was through such efforts that consensus was built around what were the operational gaps in existing systems and identifying potential solutions that were feasible and had local ownership
 - Contribution to the ICDS reform in the Eleventh Five-Year Plan of the GoI, using lessons learned in the course of the implementation of RACHNA
 - Contributions of several state nutrition policies

The program thus focused mainly on addressing operational problems with simple, feasible, scalable solutions, and ensuring that interventions of proven effectiveness actually reached communities and families at large scale during the project life. This was done using existing structures and institutions, and limited additional resources. These resources were all catalytic – primarily, a 2-3 member team of non-medical professionals at the district level complemented by local contracted NGOs. In the last year of the project, about one NGO staff per block supported the facilitation of sector and block level efforts.

By the endline, there was greater appreciation of the potential of and a sense of priority for implementing interventions to prevent malnutrition and mortality in children at the home and community level, among district and block level program managers; at the supervisory levels, there was a greater sense of purpose and focus. Overall, it appeared that greater clarity and ownership of priority interventions and approaches at these levels translated into actual output and outcome level improvements, and possibly impact level change. The clearest evidence of the influence of the ICDS and RCH programs on positive outcomes is seen in a set of related findings:

- the large increases in timely contacts (including home contacts) and information or advice provided by the AWW and ANM in many of the districts and states (Figure 8)
- the significant increases in the prevalence of desirable caring and feeding practices, as well as in service coverage, mostly in the same areas that experienced such enhanced system efforts
- the strong associations between processes meant to promote effective interventions (such as reported home visits and advice), and the reported practice of desirable health behaviors and service utilization (an example is shown in Figure 9)
- Some evidence of greater improvements in specific outcomes expected from project interventions as compared to other, unrelated or more general outcomes

Figure 8: Last trimester home visits by AWW per 30 pregnant women, Round 1 (2003), Round 2 (2004) and Round 3 (2005), RAPs.

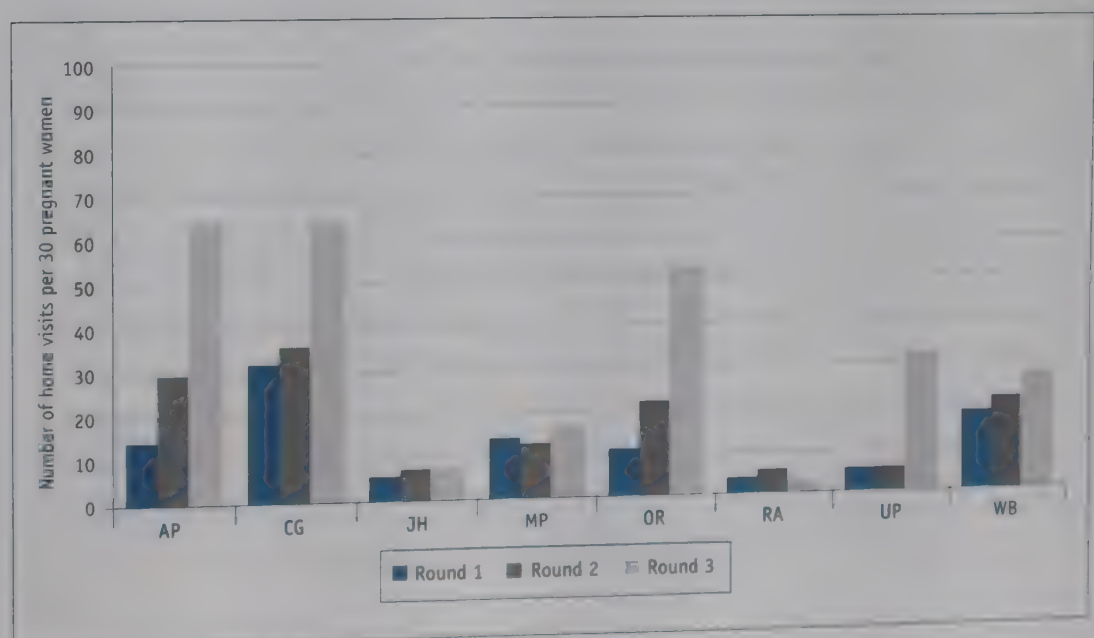
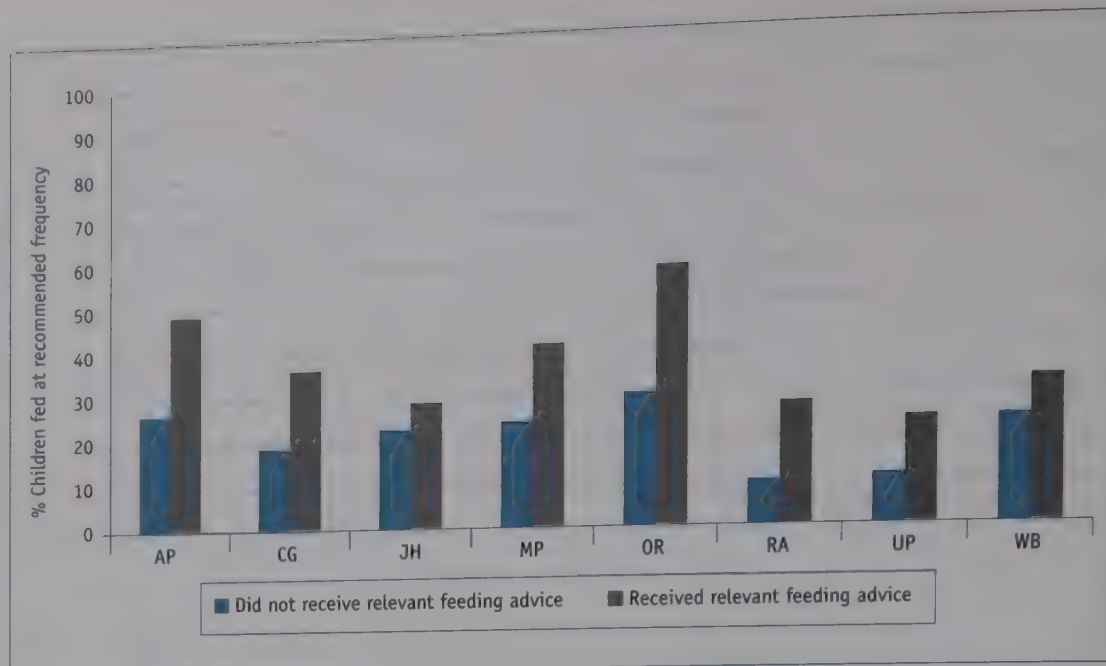


Figure 9: Association between reported advice about frequency of feeding from service providers and reported frequency of feeding semisolids in previous 24 hours, INHP Endline, 2006.



The lessons from the RACHNA program prove that there are opportunities available within existing systems for making them significantly more effective, using cost effective strategies that involve no direct extra cost to the systems themselves. The changes were not uniform across different states, and from an examination of the evidence from the panel districts, it is clear that variation between districts and blocks were large. The quality of facilitation as well as the willingness to absorb and implement appear to be some of the critical factors that contributed to the variation.

The RACHNA experience should provide important lessons for strengthening existing public health systems within available resources, and about the mechanisms for an external stakeholder for catalyzing change. These lessons are potentially applicable to areas beyond child health.

A Cost Analysis of RACHNA Program

RACHNA commissioned a study in 2006 to analyze of the costs of implementing the program through an independent external consultant. The purpose of this study was to quantify the costs of a subset of RACHNA's total activities, focusing on the incremental annual costs incurred by CARE in implementing the INHP and *Chayan*-Rural components of the Program (it does not include the costs of the *Chayan*-Urban component). The costs of the ICDS and the RCH were not estimated. This study was designed to estimate the costs of scaling-up and/or replicating RACHNA, and also sought to provide understanding of how the program is structured and operates so as to provide guidance about how to actually go about the scaling-up/replicating. The study used an activity-based costing (ABC) methodology combined with an "ingredients approach" which identifies all of the inputs required to implement the program and their costs. The study identified a prototypical state program, and estimated its costs at the state, district, block and community levels.

Key Findings

The total average annual recurrent cost of RACHNA (with its current coverage of 9 states) ranges from a low of US\$13.5 million to a high of US\$14.7 million. The majority of these costs, about 83 percent, were incurred implementing the INHP, with *Chayan-Rural* accounting for the residual. The average cost of implementing RACHNA in a single state was US\$1.9 million.

Financially speaking, RACHNA's two most important activities were (1) local level capacity building and supervision and (2) general ICDS and health system strengthening. These activities accounted for 38 and 33 percent of all RACHNA costs, respectively.

The nature of RACHNA, with its multiple interventions and its different target populations, makes it difficult to construct a measure that is comparable with other health interventions. This task is further complicated by the relatively few potential indicators for which baseline and endline data are available. Rather than simply dismiss this line of inquiry, it was deemed important to do what could be done given these limitations.

In the absence of a control group (and thus no way of taking into account what is referred to in statistical parlance as "history"), together with the absence of controls for factors other-than RACHNA that may have contributed to the reported changes, ("confounding variables" in statistical parlance), this cost-impact analysis should be regarded, at best, as constituting only an "adequacy assessment" of the impact and effectiveness of RACHNA. In short, this analysis is most accurately construed as indicative, rather than definitive.

Only three impact measures were available for this type of analysis—exclusive breastfeeding through six months of age, receiving two doses of vitamin A and reductions in malnutrition (weight for age). The estimated mortality (only) impacts of just these three impacts was 13,356 averted deaths and 380,719 disability-adjusted life-years (DALYs) gained. Presuming these impacts were due to RACHNA, it is estimated that RACHNA's cost per death averted was 47,209 rupees (US\$1,098) and its cost per DALY gained is 1,656 rupees (US\$39). Bearing in mind that these are not definitive measures of the impact of RACHNA, despite the fact that these three measures only partially account for the impact of RACHNA activities, it must be concluded that from a public health perspective, RACHNA is a "good buy". The cost per death averted is the equivalent of 157 percent of India's 2005 per capita gross national income (GNI) of US\$714, and the cost per DALY gained is 5.5 percent of the per capita GNI. Using the classificatory scheme developed by the World Health Organization's CHOosing Interventions that are Cost-Effective (CHOICE) Team—that health programs with a cost per DALY averted of less than GDP per capita are "very cost-effective"—RACHNA should be regarded as highly cost-effective and a good value for money.

There are different ways in which the coverage of RACHNA might be expanded. First, the entire RACHNA program—including the costs of CARE or some other NGO managing the entire operation—could be replicated. Replication is a strategy that calls for reproducing the entire structure of the program, including its

headquarters. In contrast, scaling-up consists of expanding the coverage of the existing program. Scaling-up may take place in those states or districts where RACHNA is currently being implemented, but in which it does not have complete coverage, or it could extend the Program to new states. Replication and scaling-up can be complementary approaches that may be combined in various ways. The costs of replicating the entire current RACHNA program, including the CARE/India headquarters costs, with the identical structure, level of staffing and operations to enable doubling the current coverage of RACHNA is US\$ 14.7 million, of which US\$12.3 is of INHP alone.

The costs of adding one state having the characteristics of the prototype (covering 9 districts, 90 blocks, 540 sectors, 10,800 AWCs and 1.08 million beneficiaries) would be US\$ 1.92 million, of which 1.34 would be for INHP, with the remainder for the *Chayan* project. Increasing the coverage by one additional district having the characteristics of the prototype (10 blocks, 60 sectors, 120 AWCs and 120,000 beneficiaries) would be USD 187,695 of which 121,287 (65%) would be for INHP with the remainder for the *Chayan project*.

In conclusion, the RACHNA program has been demonstrated to be an effective, low cost program. The RACHNA is a sound public health and nutrition program investment.

Acronyms and non-english terms used in this paper series

ABC	Activity Based Costing	GoI	Government of India
AIDS	Acquired Immuno Deficiency Syndrome	GPO	Government Partnership Officer
ANM	Auxiliary Nurse Midwife (same as MPHw, F)	HIV	Human Immunodeficiency Virus
AP	Andhra Pradesh	HMIS	Health Management Information System
ARI	Acute Respiratory Infection	ICDS	Integrated Child Development Services
AWC	Anganwadi Center	IEC	Information Education Communication
ASHA	Accredited Social Health Activist	IFA	Iron Folic Acid
AWW	Anganwadi Worker	IFPRI	International Food Policy Research Institute
BCC	Behavior Change Communication	IIPS	Indian Institute of Population Studies
BCG	Bacillus Calmette-Guerin (vaccine)	INHP	Integrated Nutrition and Health Project
BF	Breastfeeding	ISOFI	Inner Spaces and Outer Faces Initiative (CARE-India)
BL	Baseline	IYCF	Infant and Young Child Feeding
BLAC	Block Level Advisory Committee	JH	Jharkhand
BLRM	Block Level Review Meeting	JHBSPH	Johns Hopkins Bloomberg School of Public Health
CA	Change Agent	LBW	Low Birth Weight
CB	Capacity Building	LHV	Lady Health Visitor (also called Multipurpose Health Supervisor, Female)
CBO	Community-based Organization	LS	Lady Supervisor
CBMS	Community Based Monitoring Systems	MCHN	Maternal and Child Health and Nutrition
CDPO	Community Development Project Officer	MELA	Meets for Empowerment, Learning and Action
CES	Coverage Evaluation Survey	M&E	Monitoring and Evaluation
CF	Complementary Feeding	MIS	Management Information System
<i>Chayan</i>	Hindi word, means Choices	MMR	Monthly Monitoring Report/Maternal Mortality Rate/Ratio
CG	Chhattisgarh	MoHFW	Ministry of Health and Family Welfare
CIHQ	CARE-India Headquarters	MWCD	Ministry of Women and Child Development
CPR	Contraceptive Prevalence Rate	MHRD	Ministry of Human Resource Development
CPW	Currently Pregnant Women	MP	Madhya Pradesh
CSB	Corn-Soya Blend	MPHW, F	Multipurpose Health Worker, Female (same as ANM)
DALY	Disability Adjusted Life-Years	MPHW, M	Multipurpose Health Worker, Male
DHFW	Department of Health and Family Welfare (usually, MoHFW)	MPR	Monthly Progress Report
DLAC	District Level Advisory Committee	MTR	Mid Term Review (RACHNA)
DLHS	District Level Health Survey	NCHS	National Center for Health Statistics
DPT	Diphtheria-Pertussis-Tetanus	NER	Newborn/Nutrition Evaluation Report
DPO	District Program Officer (INHP)	NFHS	National Family Health Survey
DS	Demonstration Site	NGO	Non-Governmental Organization
DT	District Team	NHD	Nutrition and Health Day
DWCD	Department of Women and Child Development (now, MWCD)	NRHM	National Rural Health Mission
EBF	Exclusive Breastfeeding	OCP	Oral Contraceptive Pill
EL	Endline	OPV	Oral Polio Vaccine
ELR	Early Learning Sites	OR	Orissa
ER	Evaluation Research		
FANTA	Food And Nutrition Technical Assistance		
FE	Final Evaluation		
GDP	Gross Domestic Product		
GNI	Gross National Income		

PHC	Primary Health Center	SC	Scheduled Caste
PHN	Population, Health & Nutrition	SES	Socio-Economic Scores/Status
PIP	Project Implementation Plan	SHG	Self-Help Group
PLA	Participatory Learning and Action	SIFPSA	State Innovations in Family Planning Services Project Agency
PMP	Private Medical Practitioner	SMO	Social Marketing Officer (<i>Chayan</i>)
PRI	Panchayati Raj Institution	SMT	Self Monitoring Tools
PSI	Population Services International	SPD	Senior Program Director
PSU	Primary Sampling Unit	SPR	State Program Representative
RA	Rajasthan	STI	Sexually Transmitted Infection
RACHNA	Reproductive and Child Health, Nutrition and HIV/AIDS Program	ST	Scheduled Tribe
RAPs	(Periodic) Rapid Assessments	TAG	Technical Advisory Group
RCH	Reproductive and Child Health (Program)	TBA	Traditional Birth Attendant
RDW	Recently Delivered Woman	TC	Training Coordinator (<i>Chayan</i>)
RHCA	Reproductive Health Change Agent	THR	Take Home Rations
RM	Regional Manager (RACHNA)	TPC	Technical Program Coordinator
RMP	Registered Medical Practitioner	TT	Tetanus Toxoid
RPD	Regional Program Director (RACHNA)	UIP	Universal Immunization Program
RS	Replication Site	UP	Uttar Pradesh
RSO	Refined Soybean Oil	WAZ	Weight-for-Age Z-score
RTI	Reproductive Tract Infection	WB	West Bengal
RVO	Refined Vegetable Oil		



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About RACHNA

Two major projects of the Reproductive and Child Health, Nutrition and HIV/AIDS (RACHNA) program of CARE-India completed five years of work supported by funds from USAID in late 2006. The second phase of Integrated Nutrition and Health Project (INHP-II) was aimed at helping reduce child malnutrition and mortality. The rural component of the *Chayan* project primarily addressed the unmet need for spacing methods, while its urban component attempted to reduce HIV transmission among at-risk groups. Together, the projects covered 78 districts and 22 cities, spread over 10 states, and worked closely with key national programs and a spectrum of different partners. This series of working papers documents the results and lessons from these five years.

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